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obstruct controls which are not used in a certain mode while at the same time exposing controls that are only used in that particular mode.

In FIGS. 4 and 5 two embodiments of the present invention are shown in a side view. FIG. 4 illustrates a mobile phone as that of FIG. 1 with a hinge element 8 of the “wrap around” type, and wherein the display element 8 completely encloses the first housing part 2, i.e. is provided with a back wall. From the portrait position where the surfaces are oriented with an angle of e.g. $\alpha=158^\circ$ the phone can be folded completely open as indicated by the dotted arrow. The display element 8 can then be slid sideways to cover/encapsulate the hinge element 6, and will arrive at the configuration depicted on the right side of the figure. In this embodiment, and as illustrated here, it is preferred that the hinge element 6 does not protrude above the surfaces of the housing elements 2 and 4, in order to enable the display element 8 to slide along smoothly. As the display element 8 fully encloses the housing in this embodiment it could otherwise have negative effects on the stability of the phone. If the hinge element 6 did protrude the display element 8 would have to be at least partly flexible to slide over the hinge element 6. This is of course undesirable, as the phone in its landscape position could suffer from a certain mechanical play.

Another variant is illustrated in FIG. 5. Here another type of hinge element 6 is used, in this case being constituted by two combined conventional hinges. Another difference shown in this figure relies on the fact that the display element 8 does not totally enclose the housing part 2, i.e. it is not provided with a back wall. Such a construction may e.g. be achieved by using side rails 14 in which the display element 8 can slide parallel to the housing parts 2 and 4. In that case the back wall is not necessary for providing a stable fit of the display element 8 on the housing. Furthermore the two hinges are shown here as protruding slightly above the surfaces of the housing elements 2 and 4.

In contrast to the previous embodiment this can be handled with the rail construction illustrated here. Corresponding indentations can be provided on the inside of the display element 8, fitting over the protrusions of the hinges. This is shown on the right side of this figure, wherein the side part of the display element 8 is cut away in order to illustrate how the indentations fit over the protrusions. As the display element 8 does not have a back wall here it is possible to provide some flexibility in the rails, in order to let the display element 8 slide smoothly and easily over the protrusions, i.e. giving it the flexibility to be slightly moved perpendicular to the surfaces of the housing parts 2 and 4 (indicated by the small arrow pointing away from the face of the housing part). The display element 8 itself does not need to provide flexibility, e.g. through a flexible material. Thus it can be locked firmly to the housing parts 2 and 4 snapping into the protrusions when it has reached the centered position, avoiding any undesired mechanical play.

In FIG. 6 a variant of a device according to the invention is illustrated, wherein a dual-function keyboard is provided. Depending on the orientation (i.e. landscape mode or portrait mode) the labels on the keys corresponding to the respective functions are readable. That is, in the landscape mode a full QWERTY keyboard is visible to the user, while in the portrait mode he can easily read the number keys for dialling and the like. The present invention offers the possibility to expose only those keys by the sliding display element which are used in a respective position of the device. User comfort is thus greatly enhanced, as there are only those keys accessible at a time, which correspond to the desired functionality of the device. The user is not confused by keys that may not provide

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a function in a specific mode at all. That is, as an example either the gaming controls or the full keyboard, or the conventional ITU-T keypad.

The connections between the three main components, i.e. the two housing parts and the display element, can be achieved through conventional flexible or coax arrangements. While this is the preferred solution it is also possible to implement the concept of the present invention using cableless connections, i.e. infra-red or even radio frequency links.

The sliding mechanism can be selected from a number of known conventional sliding mechanisms, including rails, rail and ball bearings, rail and platelet, draw types, etc. It must ensure a firm encapsulation or hold in the open position to avoid mechanical play, and a good mechanical lock in the different positions of the electronic device of the invention. The slide mechanism also should ensure an easy transformation into the different modes of the device, e.g. such that the housing of the device will spring and lock into its landscape position when the foldable housing parts are opened flat. At least the transition into the two basic positions, i.e. closed and landscape position, should be spring-assisted. It is preferred that also the additional position corresponding to the conventional open position of the foldable phone with inclined surfaces of the housing parts is spring-locked and transition into this position is assisted by spring force. In other words, the transformation mechanism should have good automatic appeal as it springs and locks into the respective operating positions of the electronic device.

Depending on the height the display element will add, the hinge element must be implemented with enough clearance to accommodate or “sandwich” the display element when the housing parts are folded together/closed. Every hinge type providing such clearance can be used within the concept of the present invention, including a so-called “wrap-around” type bendable hinge or a double-hinge arrangement.

It should be noted that, although the present invention has been described mainly in connection with mobile phones, it can also be applied to any other similar electronic device like a PDA, a smartphone and the like.

The invention claimed is:

1. Mobile electronic device, comprising:

a first housing part;

a second housing part;

a hinge element connecting said first housing part and said second housing part in a foldable manner;

said first housing part, said second housing part and said hinge element forming a housing, wherein said first housing part and said second housing part can assume the following positions:

a closed position, wherein said first housing part and said second housing part are closed and facing each other;

an open position, wherein said first housing part and said second housing part are folded apart forming an angle of approximately 180° in relation to each other;

a display element relocatably supported on said housing in said open position such that said display element can be located on either said first housing part, said second housing part or on said hinge element,

and wherein said display element has a form of a sleeve encapsulating said housing.

2. Mobile electronic device according to claim 1, wherein said first housing part and said second housing part can assume one further position, wherein said first housing part and said second housing part are folded apart forming an angle of less than 180° in relation to each other.

3. Mobile electronic device according to claim 1, wherein control elements are arranged on at least one of said first